

Amendments to the Claim

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) A safety steering column system for a motor vehicle that can be selectively configured upon entry into the motor vehicle of a driver in the event of an accident to control the movement of at least a steering wheel end region of the steering column away from the driver of the vehicle correlated to a driver's configuring parameters comprising
 - (a) the steering column comprised of an upper and a lower telescoping parts part with the upper part including the steering wheel end region, with the telescoping parts of the steering column being mounted for telescoping toward the front of the vehicle,
 - (b) an adjustment mechanism intercoupling the telescoping parts of the steering column,
 - (c) a first sensing device for sensing a physical parameter related to the size of the driver when the driver has entered the motor vehicle and providing a first configuring output,
 - (d) a second sensing device for sensing a seat belt parameter of whether the driver who is when seated in the motor vehicle has a seat belt fastened and providing a second configuring output,
 - (e) the adjustment mechanism including
 - (i) a lockable load absorber,
 - (ii) a triggerable unlocking device associated with the load absorber that when triggered unlocks the load absorber, and
 - (iii) at least one triggerable operator that when triggered positively moves the telescoping parts of the steering column together away from the driver, and
 - (f) a controller for receiving the outputs from the sensing devices and responsive to the received outputs for configuring the adjustment mechanism, when the driver

enters the motor vehicle and prior to any accident, by controlling the triggerable unlocking device and the triggerable operator so that the adjustment mechanism operates to operate according to one of at least three preselected different and distinct operations.

2. (original) The safety steering column system according to claim 1, wherein the adjustment mechanism includes an energy generator for the operator.

3. (previously presented) The safety steering column system according to claim 2, wherein the energy generator is one of a pyrotechnic gas generator and an electrical device.

4. (original) The safety steering column system according to claim 1, wherein a pair of lockable load absorbers are provided, capable of being operated individually or simultaneously.

5. (original) The safety steering column system according to claim 4 wherein the load absorbers have different absorbencies.

6. (original) The safety steering column system according to claim 1, wherein the load absorber includes a deformation member.

7. (currently amended) The safety steering column system according to claim 6, wherein the deformation member is comprised of one of a cutting knife, material deforming bolts, and a deceleration carriage having at least two deceleration force steps, a tearable sheet, a cylinder containing a bendable tube and a cylinder containing a corrugated tube.

8. (currently amended) The safety steering column system according to claim 1, wherein sensors sense and the first and second sensing devices provide outputs to the controller of the driver's seat position, and at least one of driver's weight and driver's posture and seat-belt fastened status.

9. (original) The safety steering column system according to claim 1, wherein the controller triggers the operator in dependence on the driver's seat position.

10. (currently amended) The safety steering column system according to claim 1, wherein the controller is responsive to a sensed output that is indicative of a predetermined distance or less between the driver and the steering wheel end region to condition the adjustment mechanism to trigger in case of an accident.

11 . (original) The safety steering column system according to claim 1, wherein the controller conditions the load absorber responsive to the output of the sensor for one of the driver's seat belt fastening status and seat position.

12. (original) The safety steering column system according to claim 1, wherein the controller conditions the adjustment mechanism in the case of an accident by unlocking the load absorber responsive to the driver not wearing the seat belt.

13. (currently amended) The safety steering column system according to claim 1, wherein the first sensing device includes one of an electrical switch and optical a switch juxtaposed with respect to seat guiding rails to sense seat position.

14. (currently amended) The safety steering column system according to claim 1, wherein the second sensing device includes one of an electrical and optical a buckle usage switch juxtaposed with respect to the seat belt buckle for the driver's seat belt to sense its status.

15. (currently amended) A safety steering column system for a motor vehicle that is selectively configured upon entry into the motor vehicle of a driver in the event of an accident to control the movement of at least a steering wheel end region of the steering column away from the driver of the vehicle correlated to a driver's configuring parameters comprising,

(a) the steering column comprised of an upper and a lower telescoping parts part with the upper part including the steering wheel end region, with the telescoping parts of the steering column being mounted for telescoping toward the front of the vehicle,

(b) an adjustment mechanism intercoupling the telescoping parts of the steering column,

(c) a first sensing device for sensing a physical parameter related to the size of the driver when the driver has entered the motor vehicle and providing a first configuring output,

(d) a second sensing device for sensing a seat belt parameter of whether the driver who is seated in the motor vehicle has a seat belt fastened and providing a second configuring output,

(e) the adjustment mechanism including

- (i) a pair of load absorbers having different load absorbency,
- (ii) a lock associated with each load absorber,
- (iii) a triggerable unlocking device associated with each lock that when triggered unlocks the associated lock, and
- (iv) at least one operator including a triggerable device to generate energy for the operator so that when the device is triggered and energy is generated to drive the operator, the operator will positively move the telescoping parts of the steering column together away from the driver, and

(f) a controller for receiving the outputs from the sensing devices and responsive to the received outputs for configuring the adjustment mechanism, when the driver enters the motor vehicle and prior to any accident, by controlling the two triggerable unlocking devices and the triggerable operator so that the adjustment mechanism operates to operate according to one of at least three preselected different and distinct operations.

16. (original) The safety steering column system according to claim 15, wherein the adjustment mechanism includes an energy generator for the operator.

17. (previously presented) The safety steering column system according to claim 16, wherein the energy generator is a pyrotechnic gas generator.

18. (original) The safety steering column system according to claim 15, wherein the load absorbers include a deformation member.

19. (currently amended) The safety steering column system according to claim 18, wherein the deformation members are comprised of one of ~~material deforming belts, a deceleration carriage having at least two deceleration force steps a tearable sheet, a cylinder containing a bendable tube, a cylinder containing a corrugated tube~~ and combinations thereof

20. (currently amended) The safety steering column system according to claim 15, wherein ~~sensors sense and the first and second sensing devices provide outputs to the controller of the driver's seat position, and at least one of driver's weight and driver's posture and seat belt fastened status.~~

21. (original) The safety steering column system according to claim 15, wherein the controller triggers the operator in dependence on the driver's seat position.

22. (currently amended) The safety steering column system according to claim 15, wherein the controller is responsive to a sensed output that is indicative of a predetermined distance or less between the driver and the steering wheel end region to condition the adjustment mechanism to trigger in case of an accident.

23. (original) The safety steering column system according to claim 15, wherein the controller conditions the load absorbers responsive to the output of the sensor for one of the driver's seat belt fastening status and seat position.

24. (previously presented) The safety steering column system according to claim 15, wherein the controller conditions the adjustment mechanism in the case of an accident by unlocking at least one of the load absorbers responsive to the driver not wearing a seat belt.

25. (currently amended) The safety steering column system according to claim 15, wherein the first sensing device includes one of an electrical switch and optical a switch juxtaposed with respect to seat guiding rails to sense seat position.

26. (currently amended) The safety steering column system according to claim 15, wherein the second sensing device includes one of an electrical and optical a buckle usage switch juxtaposed with respect to the seat belt buckle for the driver's seat belt to sense its status.

27. (cancelled)

28. (cancelled)

29. (cancelled)

30. (cancelled)

31. (cancelled)

32. (cancelled)

33. (cancelled)

34. (cancelled)

35. (cancelled)

36. (cancelled)

37. (cancelled)

38. (currently amended) A safety telescopic steering column system for a motor vehicle in which an upper part of the telescopic steering column telescopes

with respect to a lower part that is fixed relative to the vehicle comprising;

- a detector that receives input correlated with parameters related to a driver of the vehicle;
- a coupling including at least one lockable load absorber, the coupling interconnecting the telescoping parts of the steering column, the coupling capable of being that is arranged in a plurality of different operative configurations, wherein the at least one load absorber is composed of a deformable sheet metal plate member provided with a tearing seam, such that [[the]] a load is absorbed by deforming the deformable sheet metal plate member, including tearing the deformable sheet metal plate member at the tearing seam; and
- a controller responsive to the input to the detector to selectively pre-configure the coupling from among the different operative configurations upon a driver entering the vehicle and prior to an accident happening.

39. (Cancelled)

40. (previously presented) A safety steering column system according to claim 38 wherein the coupling includes a plurality of lockable load absorbers.

41. (previously presented) A safety steering column system according to claim 40 wherein the plurality of lockable load absorbers are tailored to several load absorber levels.

42. (previously presented) A safety steering column system according to claim 38 wherein an ignitable pyrotechnic piston-cylinder is mounted in parallel to the coupling, and controlled by the controller to move the upper part of the telescopic steering column down.

43. (currently amended) A safety steering column system according to claim [[39]] 38 wherein the controller switches the at least one load absorber between locked and unlocked conditions.

44. (previously presented) A safety steering column system according to claim 43 wherein electrically ignitable pyrotechnic fasteners are provided to enable switching between locked and unlocked conditions.

45. (currently amended) A safety steering column system according to claim [[39]] 38 wherein the controller switches the at least one load absorber in steps.

46. (cancelled)

47. (currently amended) A safety steering column system according to claim [[40]] 38 wherein the plurality of lockable load absorbers are said at least one lockable load absorber is composed of bent plate of sheet metal members of bent metal configuration provided with tearing seams.

48. (currently amended) A safety steering column system according to claim [[39]] 38 wherein [[the]] said at least one load absorber is fixed relative to the vehicle on one side and attached to the upper part of the steering column on its other side by at least one controllable releasable fastener.

49. (currently amended) A safety steering column system according to claim [[39]] 38 wherein [[the]] said at least one load absorber is fixed relative to the vehicle on one side and attached to the upper part of the steering column on its other side by at least one pyrotechnic ignitable fastener.

50. (previously presented) A safety steering column system according to claim [[40]] 15 wherein the load absorbers are fixed relative to the vehicle on one side and attached to the upper part of the steering column on its other side by controllable releasable fasteners.

51. (previously presented) A safety steering column system according to claim 50 wherein the controllable releasable fasteners are pyrotechnic ignitable fasteners ignitable by the controller.

52. (currently amended) A safety steering column system according to claim [[39]] 38 wherein said at least one [[the]] load absorber is composed of at least one bent sheet of metal member adapted to be torn out to absorb force of a load.

53. (currently amended) A safety steering column system according to claim [[40]] 52 wherein [[the]] said at least one load absorbers are is composed of a plurality of bent sheet of metal members adapted to be torn out to absorb force of a plurality of different loads.

54. (currently amended) A safety steering column system according to claim 52 wherein the at least one bent sheet of metal member adapted to be torn out to absorb force of a load is composed of two sections fastened together by fasteners with[[,]] one section of which is fixed relative to the vehicle and the other section of

~~which is provided with a slot, and a fastener slidably mounted in the slot attaching the other section attached to the upper part of the steering column, one section provided with a slot in which one of the fasteners is slidably mounted to achieve a step load absorption.~~

55. (cancelled)

56. (cancelled)

57. (cancelled)

58. (currently amended) A safety steering column system according to claim [[39]] 38 wherein ~~the said at least one~~ load absorber includes a controllable releasable fastener for switching the load absorber between a locked condition in which it functions as a load absorber and unlocked condition in which the load absorber is inactive.

59. (currently amended) A safety steering column system according to claim 58 wherein the said at least one load absorber includes a pyrotechnic controllable releasable fastener for switching the load absorber between the locked condition in which it functions as a load absorber and unlocked condition in which the load absorber is inactive.

60. (previously presented) A safety steering column system according to claim 59 wherein the pyrotechnic controllable releasable fastener is a pyrotechnic controllable releasable bolt.

61. (previously presented) A safety steering column system according to claim 60 wherein an ignitable pyrotechnic piston-cylinder is mounted in parallel to the load absorber, and controlled by the controller to move the upper part of the telescopic steering column down.

62. (cancelled)

63. (cancelled)

64. (currently amended) A safety steering column system according to claim [[39]] 38 wherein the load absorber is connected on one side by a pyrotechnic controllable releasable fastener to supporting structure.

65. (cancelled)

66. (cancelled)

67. (cancelled)

68. (cancelled)

69. (previously presented) A safety steering column system according to claim [[56]] 1 wherein the load absorber includes an ignitable pyrotechnic piston-cylinder to move the upper part of the telescopic steering column down.

70. (cancelled)

71. (currently amended) A safety steering column system according to claim [[39]] 38 wherein a power unit is mounted in parallel to the coupling, and controlled by the controller to move the upper part of the telescopic steering column down.

72. (currently amended) A safety steering column system according to claim 71 wherein the power unit piston-cylinder includes a mechanism to prevent reversal.

73. (cancelled).

74. (cancelled)

75. (currently amended) A safety steering column system according to claim [[39]] 94 wherein the reverse stopping mechanism includes balls contained in an axially diminishing race.

76. (cancelled)

77. (previously presented) A method of operating a safety steering column system comprising the steps of

a. providing a safety telescopic steering column system for a motor vehicle in which an upper part of the telescopic steering column telescopes with respect to a lower part that is fixed relative to the vehicle;

b. detecting input correlated with parameters related to a driver of the vehicle;

c. interconnecting the telescoping parts of the steering column in a way that provides a plurality of different operative configurations;

d. controlling the selection of a configuration[[s]] of the coupling from among the different operative configurations responsive to the detected input upon a driver entering the vehicle and prior to the happening of an accident,

wherein the interconnecting step includes load absorption, and the further step of conditioning the load absorption for active or inactive operation,

78. (previously presented) A method of operating a safety steering column system according to claim 77 including the further step of moving the upper part of the

telescopic steering column down responsive to an accident and inactivation of all load absorption.

79. (previously presented) A method of operating a safety steering column system according to claim 77 wherein the load absorption occurs at different load levels.

80. (previously presented) A method of operating a safety steering column system according to claim 77 including the step of controlling switching between active and inactive operation of the load absorption by a pyrotechnic generation of force.

81. (previously presented) A method of operating a safety steering column system according to claim 77 wherein the load absorption is achieved by a tearing of metal.

82. (cancelled)

83. (previously presented) A method of operating a safety steering column system according to claim 77 wherein the load absorption is achieved by a deforming of metal.

84. (currently amended) A method of operating a safety steering column system according to claim 77 wherein the load absorption is ~~rendered~~ conditioned to remain active by a locking action.

85. (previously presented) A method of operating a safety steering column system according to claim 77 wherein the load absorption is rendered inactive by an unlocking action.

86. (currently amended) A method of operating a safety steering column system according to claim 78 including the further step of reverse ~~stopping~~ blocking of the upper part of the telescopic steering column after having moved down.

87. (new) A safety steering column system according to claim 52 wherein the at least one bent sheet of metal member adapted to be torn out to absorb force of a load is composed of two sections fastened together by fasteners with one section fixed relative to the vehicle and the other section attached to the upper part of the steering column, one section provided with a slot in which one of the fasteners is slidably mounted to achieve a step load absorption.

88. (new) A safety steering column system according to claim 1 wherein the load absorber comprises a metal surface coating with a cutting tool to cut a

predetermined chip from the metal surface to absorb force of a load.

89. (new) A safety steering column system according to claim 88 wherein the metal surface is a cylinder.

90. (new) A safety steering column system according to claim 88 wherein the load absorber includes a cam coacting with the cutting tool to achieve the predetermined chip.

91. (new) A safety steering column system according to claim 1 wherein the load absorber comprises a deformable tube that deforms responsive to and while absorbing force of a load.

92. (new) A safety steering column system according to claim 91 wherein the tube is one of a corrugated tube and a folded back tube.

93. (new) A safety steering column system according to claim 1 wherein the load absorber includes an ignitable pyrotechnic piston-cylinder to move the upper part of the telescopic steering column down when the load absorber is unlocked.

94. (new) A safety steering column system according to claim 42 wherein the ignitable pyrotechnic piston-cylinder includes a reverse stopping mechanism.

95. (new) A safety steering column system according to claim 72 wherein the reverse stopping mechanism includes balls contained in an axially diminishing race.

96. (new) A method of operating a safety steering column system according to claim 77 wherein the load absorption is achieved by a cutting of metal.